Effects of Land Development and Season on Heavy Metal Concentrations in Urban Streams

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August 24, 2018

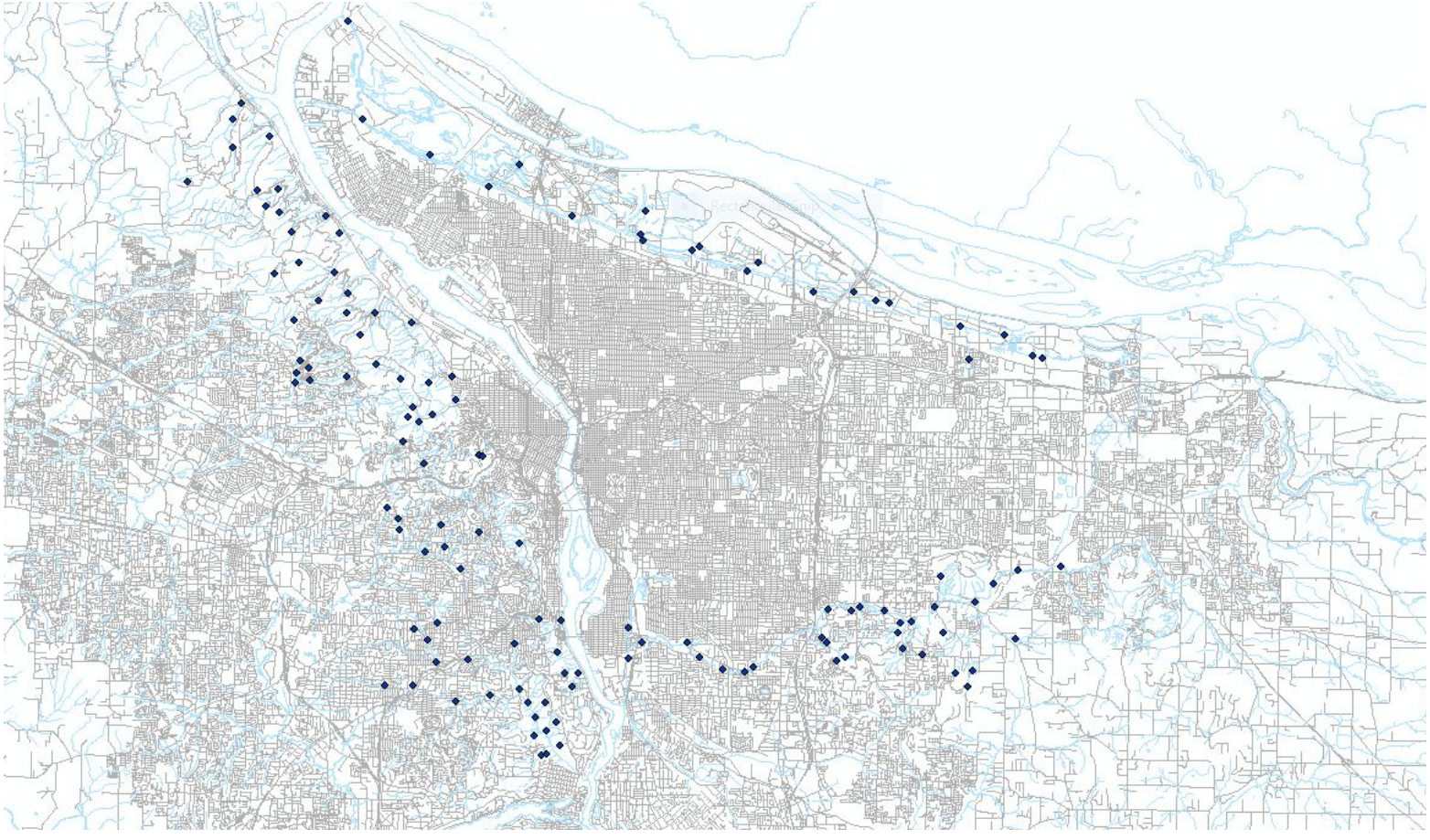
Stormwater runoff and pollutants

Hazards of Stormwater Runoff | Hurricane Tips | Hurricane Awareness. (2013, July 17). Retrieved August 23, 2018, from https://www.national-hurricane-center.org/uncategorized/hazards-of-stormwater-runoff

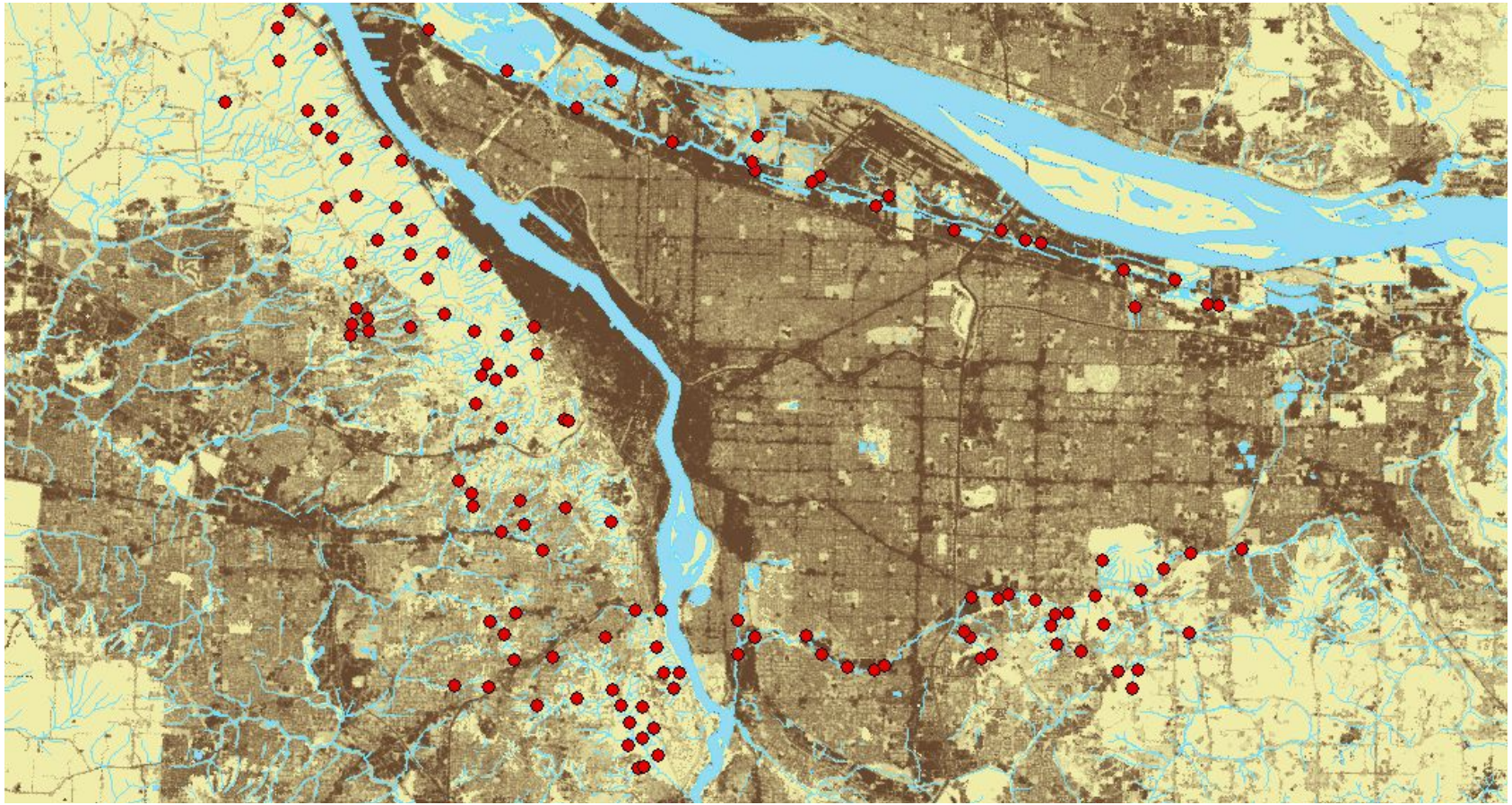
Green infrastructure

Green Streets: Restoring Rivers, Revitalizing Neighborhoods, and Making Streets Safer. (n.d.). Retrieved August 23, 2018, from https://www.rivernetwork.org/case-study/green-streets-restoring-rivers-revitalizing-neighborhoods-making-streets-safer/

Methodology



Monitoring locations and impervious surfaces

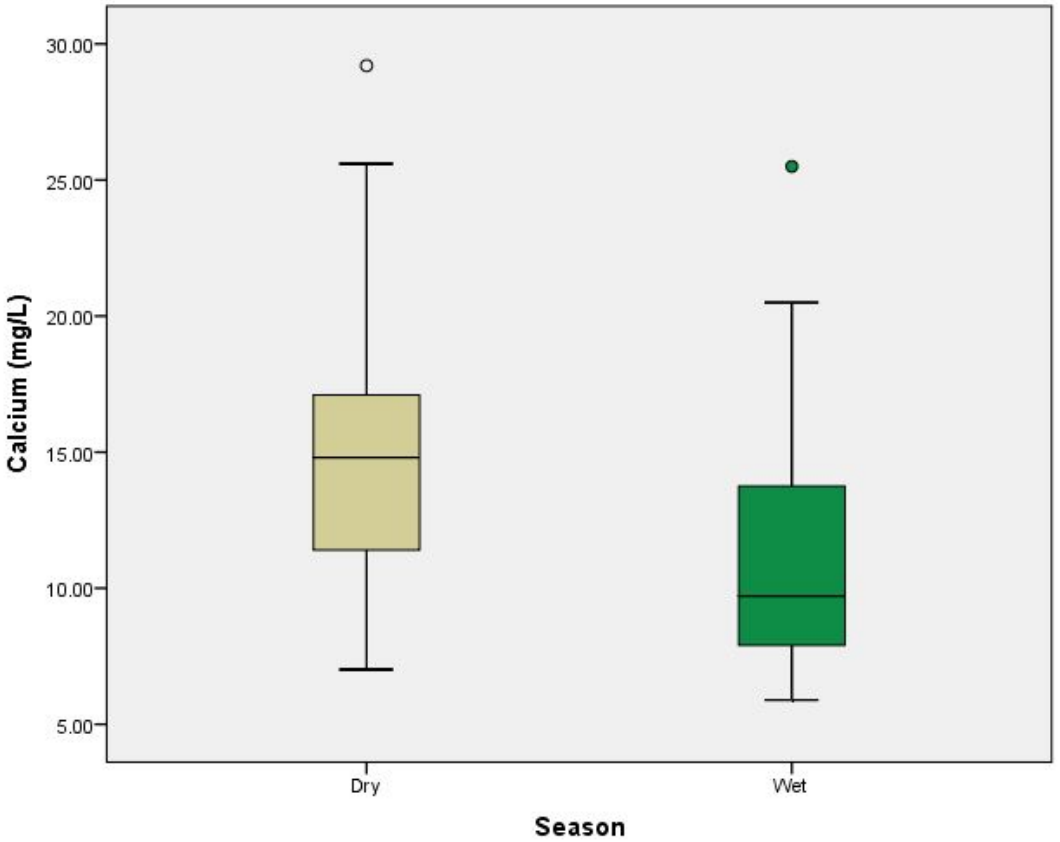


Results - Season

Percent difference between seasons - Calcium

Greatest: 25.04% ($p < 0.001$)
(Moderate development, GI present)

Lowest: 15.99% ($p = 0.007$)
(Moderate development, GI absent)



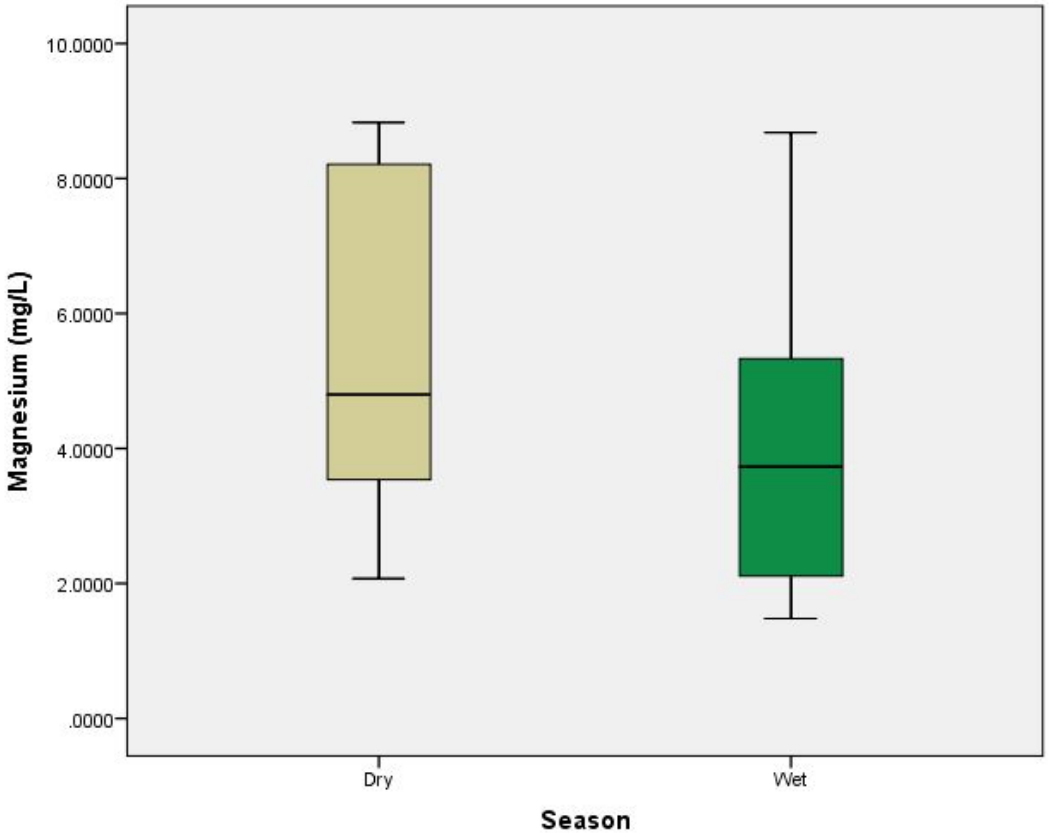
Moderate development, GI present

Results - Season

Percent difference between seasons - Magnesium

Greatest: 28.8% (p = 0.040)
(Low development, GI present)

Lowest: 19.5% (p = 0.001)
(Moderate development, GI absent)



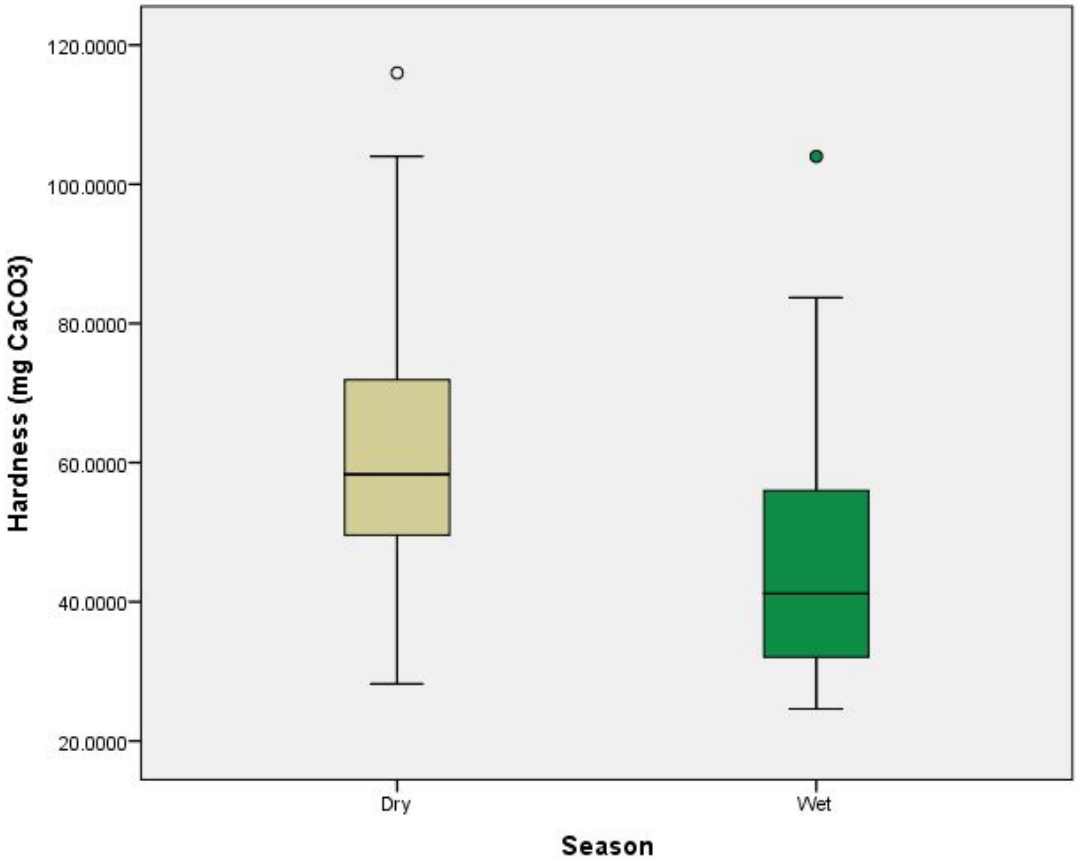
Low development, GI present

Results - Season

Percent difference between seasons - Hardness

Greatest: 25.7% ($p < 0.001$)
(Moderate development, GI present)

Lowest: 17.3% ($p = 0.003$)
(Moderate development, GI absent)



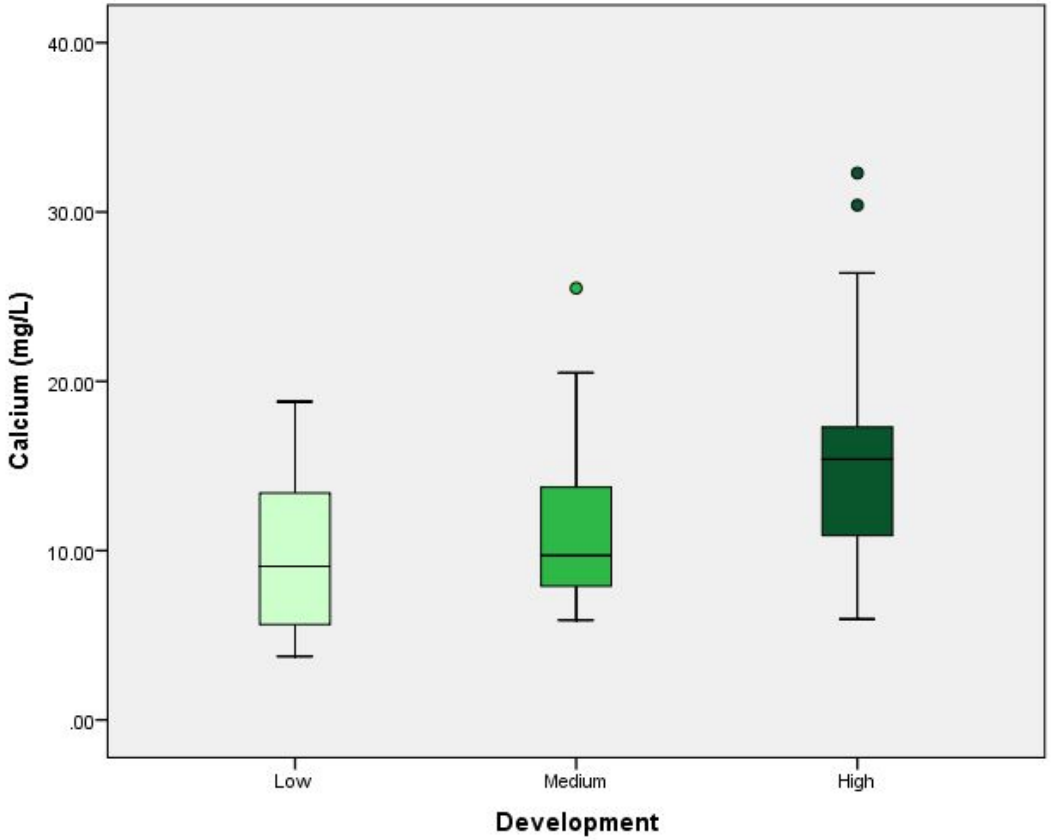
Moderate development, GI present

Results - Development

Percent difference between low and high development levels - Calcium

Greatest: 34.17 ($p < 0.001$)
(Wet season, GI present)

Lowest: 27.31% ($p = 0.010$)
(Dry season, GI present)



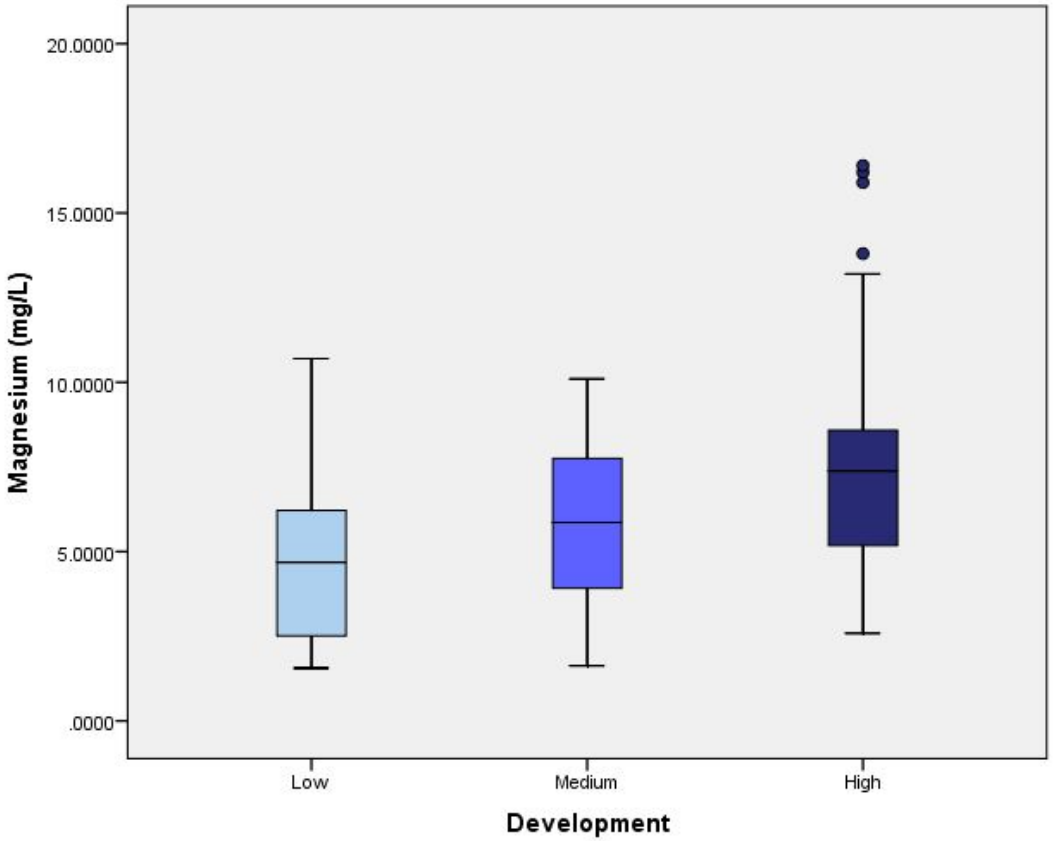
Wet season, GI present

Results - Development

Percent difference between low and high development levels - Magnesium

Greatest: 35.11% ($p < 0.001$)
(Dry season, GI absent)

Lowest: 24.75% ($p = 0.021$)
(Dry season, GI present)



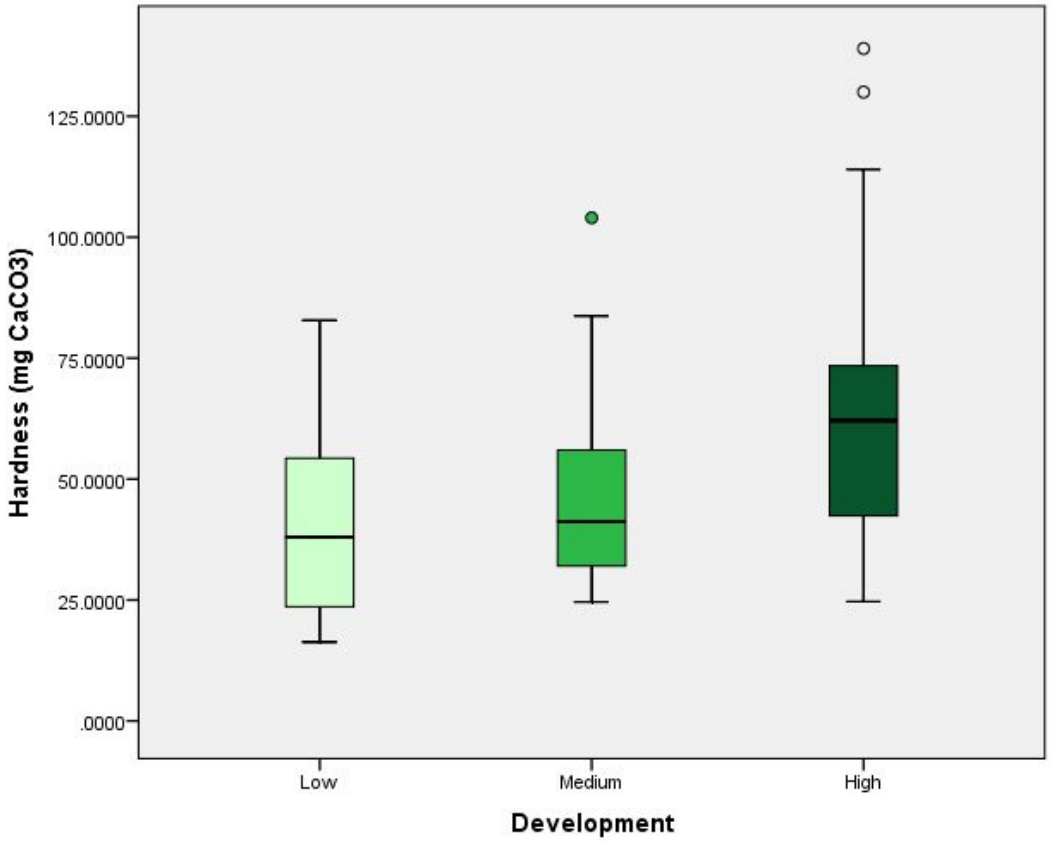
Dry season, GI absent

Results - Development

Percent difference between low and high development levels - Hardness

Greatest: 33.54% ($p < 0.001$)
(Wet season, GI present)

Lowest: 26.25% ($p = 0.013$)
(Dry season, GI present)

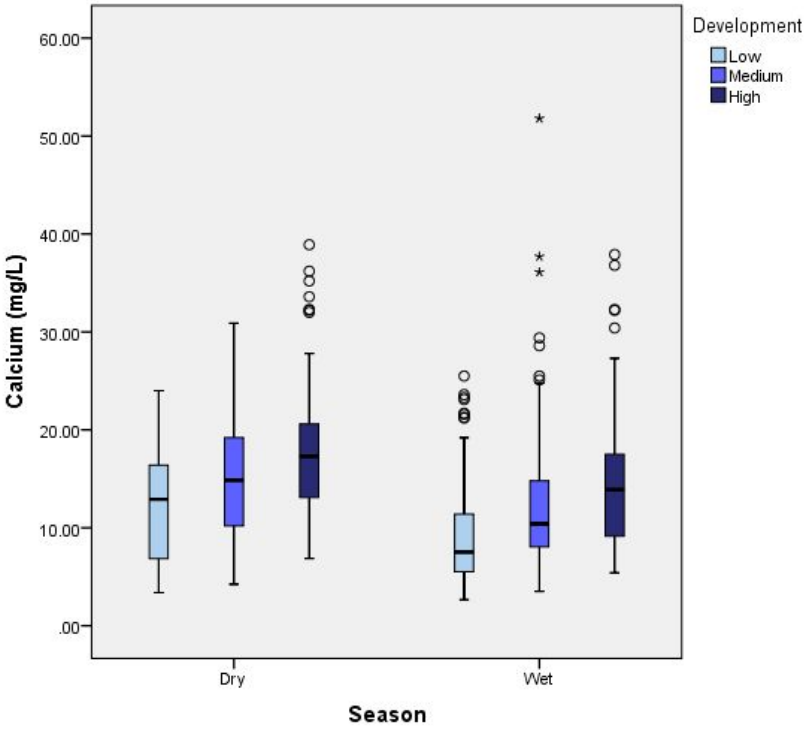


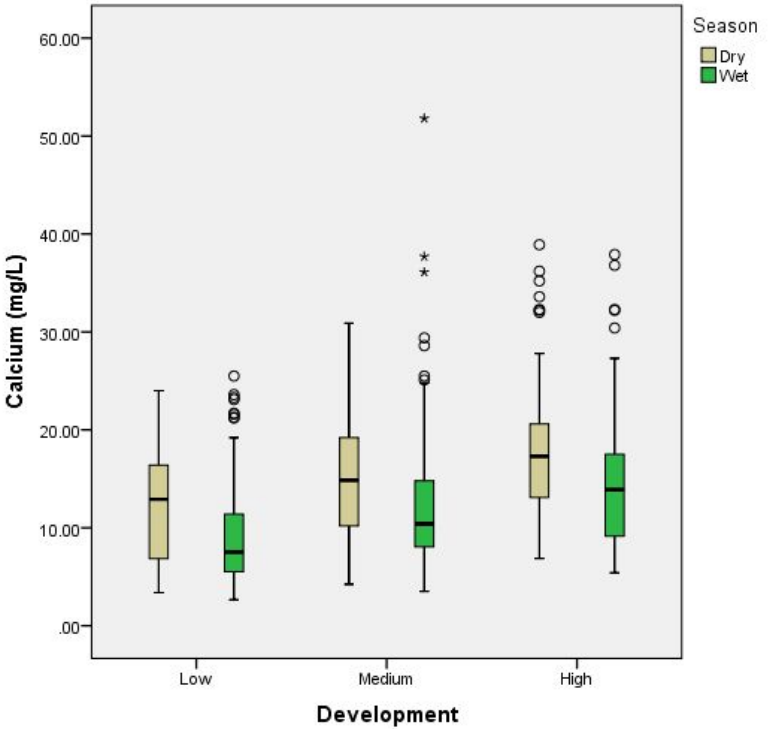
Wet season, GI present

Results - Green infrastructure

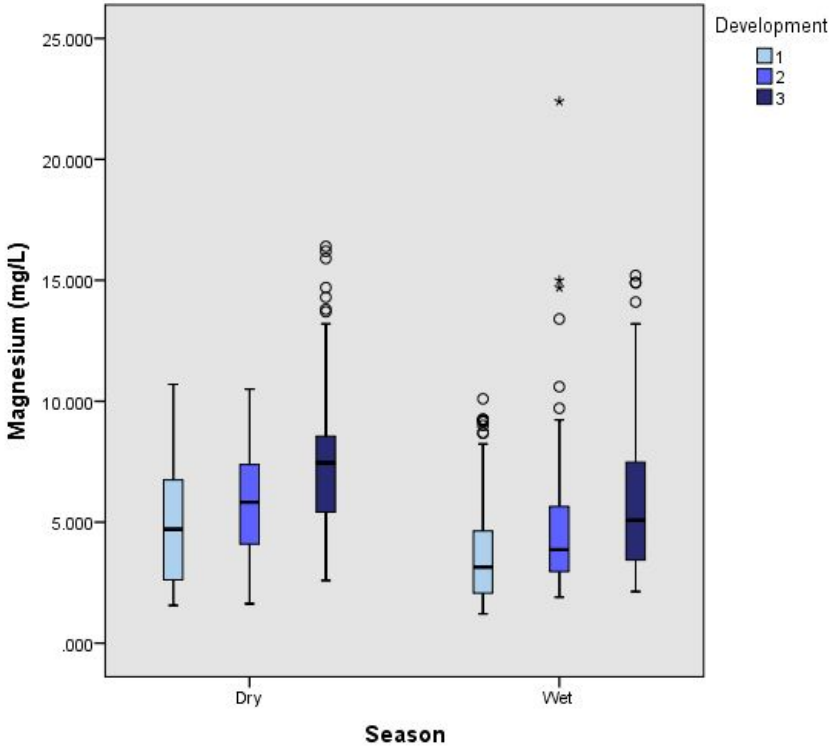
Wenk :: Urban Water + Green Infrastructure. (n.d.). Retrieved August 7, 2018, from http://www.wenkla.com/projects/urban-water-green-infrastructure/

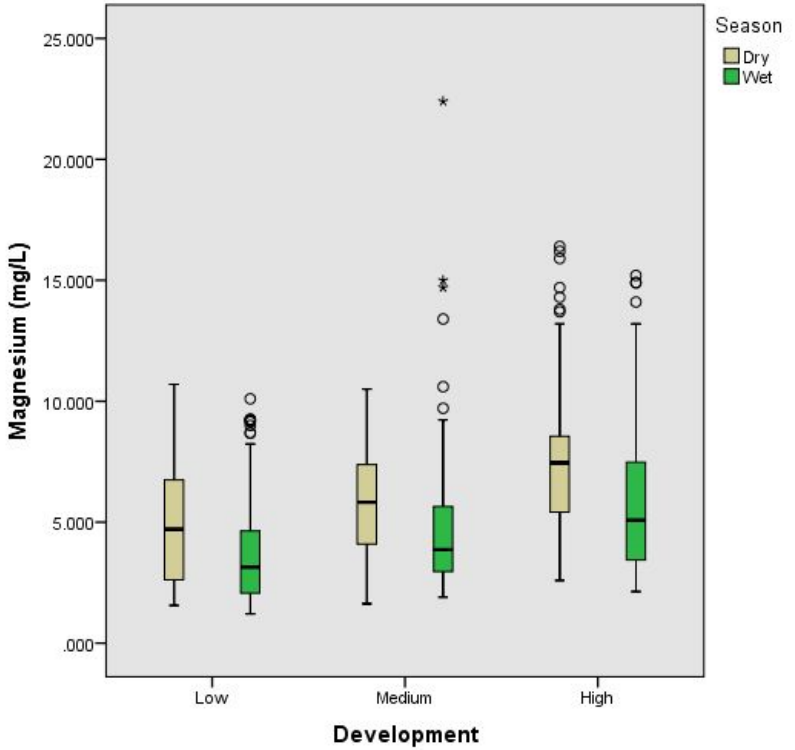
Results - Summary: Calcium



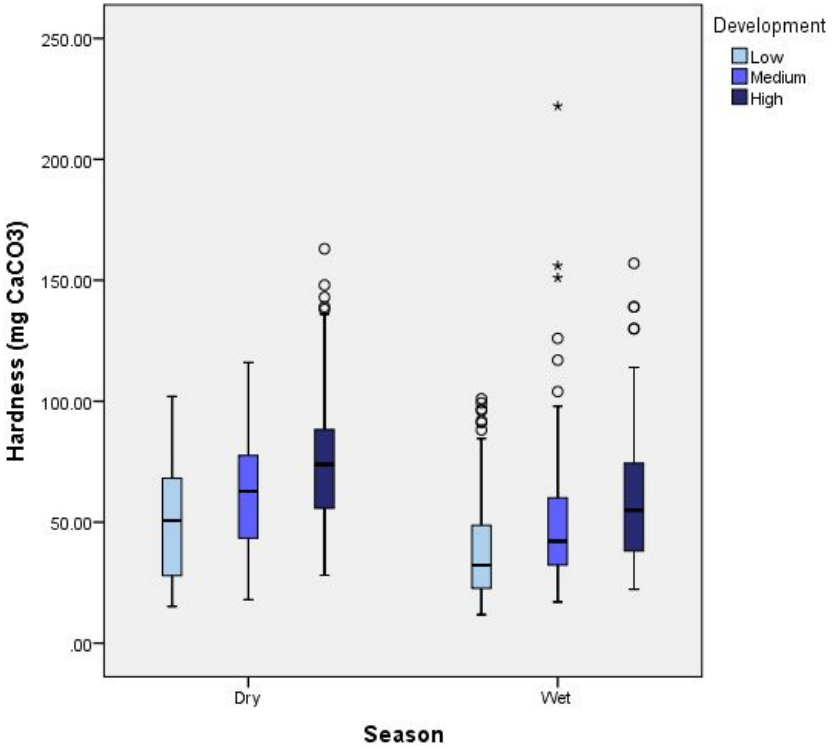


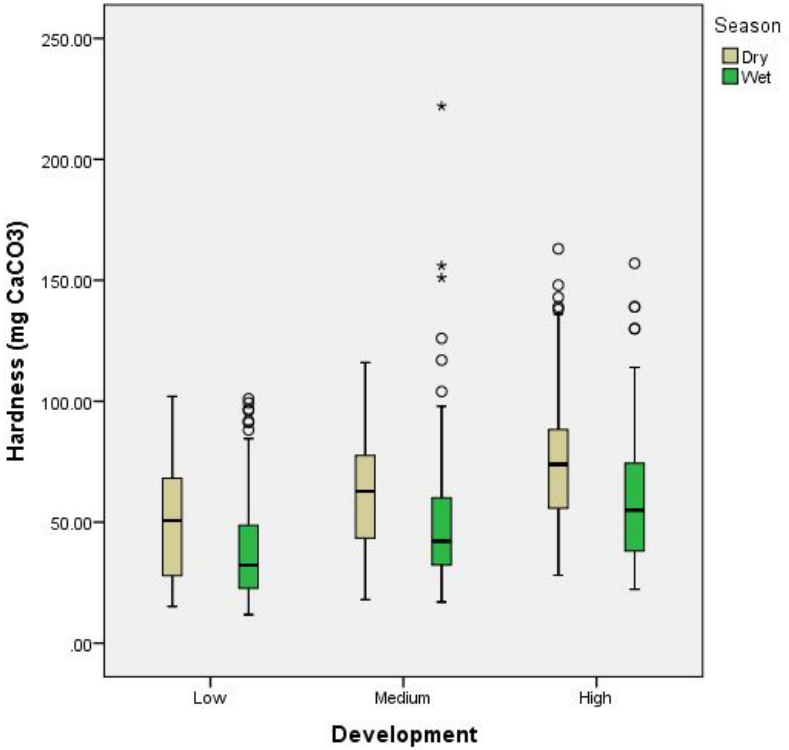
Results - Summary: Magnesium





Results - Summary: Hardness





Conclusions and Future areas of study

Water and Wellness: Green Infrastructure for Health Co-Benefits. (n.d.). Retrieved August 24, 2018, from http://stormwater.wef.org/2014/04/water-wellness/

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